

## Accelerated Essentials of Chemistry, Chem 105

Lecture Section 001: Mon-Wed 9:40-11:30 pm, E 110, Karen Hammond, SN 321, 426-1386

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Office hours: M: 11:40am-12:30pm, 3:30-4:30pm; T, W: 12-4pm; F: 10am-3pm

### Course Philosophy:

This course is designed to give the student an understanding of the principles of chemistry, especially as they relate to careers in a health-related profession such as nursing. The concepts covered include inorganic and organic chemistry, and biochemistry. This course includes both lecture and laboratory components.

### Prerequisite:

Due to the math content in this course, you must have previously passed Math 25, or achieve a satisfactory score on the algebra placement exam.

Due to the accelerated pace of this course, as stated in the BSU Catalog, it is assumed that students have completed either one year of high school chemistry or a semester preparative chemistry course (such as Chem 099).

### Required Materials:

The lecture text is General, Organic, and Biological Chemistry by H. Stephen Stoker, 4<sup>th</sup> Ed.

The online program 'Blackboard' will be used to post announcements, lecture outlines, homework assignments, grades, and email contact if necessary. It is recommended that you print the lecture outline and have it available to fill in and supplement during lecture. **Please make sure your email address in Blackboard is current.**

Blackboard can be accessed at: <http://blackboard.boisestate.edu>. Your login and password are the same as used for BroncoWeb. You are expected to monitor Blackboard several times a week to check for new announcements or postings.

For the laboratory, the Chemistry 105 Laboratory Manual is available from the BSU Bookstore. You are required to provide your own eye protection – either safety glasses or goggles; recommended styles are available in the Bookstore. The Laboratory Syllabus and Schedule will be passed out in lab; lab scores and grades will be posted on Blackboard.

**Note:** You MUST attend the first week of lab! Students that miss the first week of lab will be dropped from BOTH lecture and lab.

### Learning Objectives:

At the successful completion of this course, each student should:

1. Be able to describe the make-up of the atom and understand how to use the periodic table.
2. Understand the bonding, structure and nomenclature of inorganic compounds, and understand how to write formulas of compounds.
3. Be able to complete and balance chemical equations, and recognize various types of reactions.
4. Understand how to set up and solve stoichiometry problems.
5. Understand the different physical states of matter and the basic concepts of the gas laws.
6. Have a basic understanding of solution chemistry, including colligative properties, dilutions, buffers, and pH.
7. Understand the basic concepts of nuclear chemistry and radioactive decay.
8. Be able to identify and name numerous functional groups of organic compounds, and recognize their related chemical and physical properties.
9. Understand the relationship of various biochemical compounds to their medical and health functions.
10. Have a basic understanding of carbohydrates, lipids, amino acids, and proteins.
11. Be able to use critical thinking and problem solving skills to solve basic problems in chemistry.
12. Understand the correlation between lecture topics and laboratory activities.

### Attendance:

Attendance in lecture is highly recommended, however roll will not be taken and 'pop' quizzes will not be given. If you miss a lecture, filled-in overheads will be available for copying from the instructor. Realize though, that since everything *stated* in lecture will not be *written* on the overheads, these will only be helpful, not complete.

### Lecture Assignments, Extra Credit and Exams:

There will be a homework assignment covering every two to three chapters (8 total), each worth 15 points, for a total of 120 points. Each assignment will be posted on Blackboard as both a document and a quiz, with identical questions.

You may print the document to work through the questions and problems, then log in to the 'quiz' to submit your answers. You will only be allowed one login to the quiz, so be thorough in working the problems first. Correct answers with explanations will be posted after the due date has passed.

There will be four exams, each worth 100 points, plus the final, worth 120 points. Each exam will cover only the material presented since the last exam, but realize that many topics carry throughout the entire course. The final will be cumulative. You must take the final to obtain at least a D in the course. A periodic table will be provided with each exam, along with formulas and values you may need for calculations. You will be allowed one side of an 8.5"x11" paper with any additional information desired for the final exam; this page must be handwritten and will be submitted with the exam.

A note about the final: If a student's percentage score on the final exam is higher than the calculated lecture percentage from all exams and homework, that score from the final will be used in calculating the lecture portion of the overall grade (with extra credit still added in on top as extra points).

There will be an extra credit assignment available each week (14 total). Each assignment will be worth 3 points, but a maximum of 25 points will be allowed. These assignments will be posted and submitted on Blackboard, similar to the homework. Extra Credit assignments will be posted on Mondays, and due the following Monday.

### **Grading:**

The approximate grade scale for this course is: A (A+, A, A-): 100 – 89; B (B+, B, B-): 88 – 79; C (C+, C, C-): 78 – 69; D (D+, D, D-): 68 – 59; F: < 58.

Lecture will represent 80% of the course grade, and the laboratory will represent 20% of the grade.

You MUST pass lab with at least 70% in order to pass the overall course with a C- or better. (If a student receives below 70% in lab, the best grade that can be obtained in Chem 105 will be a 'D' – no matter what the lecture score is.)

### **Academic Honesty:**

Students in this course are expected to demonstrate academic honesty in all work. This requires that you know and adhere to the Boise State University Student Code of Conduct, which can be found at <http://www2.boisestate.edu/studentconduct/studentcodeofconduct.htm>

**Lecture Schedule:** (Any necessary changes will be posted on Blackboard)

Chapter 1: Basic Concepts About Matter

Chapter 2: Measurements in Chemistry

Chapter 3: Atomic Structure and the Periodic Table

Chapter 4: Chemical Bonding: the Ionic Bond Model

Chapter 5: Chemical Bonding: The Covalent Bond Model

#### **Exam 1 February 5**

Chapter 6: Chemical Calculations: Formula Masses, Moles, and Chemical Equations

Chapter 7: Gases, Liquids and Solids

Chapter 8: Solutions

Chapter 9: Chemical Reactions

Chapter 10: Acids, Bases and Salts

#### **Exam 2 March 5**

Chapter 11: Nuclear Chemistry

Chapter 12: Saturated Hydrocarbons

Chapter 13: Unsaturated Hydrocarbons

Chapter 14: Alcohols, Phenols, and Ethers

Chapter 15: Aldehydes and Ketones

#### **Exam 3 April 4**

Chapter 16: Carboxylic Acids and Esters

Chapter 17: Amines and Amides

Chapter 18: Carbohydrates

Chapter 19: Lipids

Chapter 20: Proteins

#### **Exam 4 April 25**

Chapter 21: Enzymes and Vitamins

Chapter 22: Nucleic Acids

**Final Exam – Monday, May 7, 10:30am – 12:30 pm, in the same classroom.**